

ADDENDUM TO TESTIMONY BY GORDON WELLS (UT-AUSTIN)

CHRONOLOGY OF FLOOD CONTROL LEVEE CONSTRUCTION AND INTERIOR FLOODWAY DEVELOPMENT IN THE LOWER RIO GRANDE VALLEY

- 1922** A near-record flood along the Rio Grande breaches the local levee at Mission leading to widespread property loss.
- 1924** The first local bond is passed to fund construction of a flood control levee along the Rio Grande from Donna to Brownsville.
- 1932** Under an agreement negotiated through the International Boundary Commission, the United States and Mexico agree to pursue mutual flood control projects on the Lower Rio Grande that would contain a design storm flood of 187,000 cfs measured at Rio Grande City. The system that includes river levees constructed along the Rio Grande and the development of interior floodways in Texas and Mexico becomes known as the Lower Rio Grande Flood Control Project.
- 1933** Following serious river flooding after a hurricane, the federal government begins to fund projects leading to a comprehensive flood control system in the Lower Rio Grande Valley of Texas. A series of WPA and military projects improves levees from Rio Grande City to Brownsville.
- 1944** Under the Water Treaty governing the Utilization of Waters of the Colorado and Tijuana Rivers and the Rio Grande, the International Boundary and Water Commission assumes responsibility for the construction and coordination of flood control measures in the United States and Mexico.
- 1951** Work is completed on the Lower Rio Grande Flood Control Project as conceived in 1932. The Mission Inlet is designed to divert water from the Rio Grande into the Interior Floodway in Hidalgo County.
- 1953** Construction of the International Falcon Reservoir is completed, providing storage capacity for 3.1 million acre-feet of water and offering flood protection from storm events affecting the main stem of the Rio Grande and its major Mexican tributary, the Rio Salado.
- 1967** Catastrophic river flooding following Hurricane Beulah overwhelms the levees along the Mission Inlet of the Interior Floodway causing widespread damage in Hidalgo County. The control structure at Mercedes regulating the flow of floodwater between the North Floodway and Arroyo Colorado fails causing extensive damage in the Harlingen area of Cameron County. The river discharge at Rio Grande City reaches 220,000 cfs exceeding the engineering design of the 1932-51 Lower Rio Grande Flood Control Project.

- 1969** Construction of the International Amistad Reservoir is completed, providing storage capacity for 5 million acre-feet of water and offering additional flood protection for events along the main stem of the Rio Grande and its major Mexican tributary, the Rio Conchos.
- 1970** The United States and Mexico agree to improve the infrastructure of Lower Rio Grande Flood Control Project to accommodate a design storm flood of 250,000 cfs measured at Rio Grande City. The IBWC supervises the design and construction of the Retamal Dam diversion in Tamaulipas and the Anzalduas Dam diversion in Hidalgo County. The Mission Inlet is abandoned. Construction occurs along the Main Floodway and North Floodway in Hidalgo and Cameron counties.
- 1988** Following the landfall of Hurricane Gilbert, floodwaters from the Rio San Juan cause the Rio Grande discharge at Rio Grande City to rise to 51,000 cfs. The Interior Floodway system is used for the first time since Hurricane Beulah. No failures occur in the system.
- 1992** The first modern hydraulic modeling study conducted by the U.S. Army Corps of Engineers concludes that the Lower Rio Grande Flood Control Project fails to meet its design criteria, and that levees are inadequate over 35 miles of the 274 total miles of levees in the system.
- 2004** A comprehensive hydraulic modeling study by the U.S. Army Corps of Engineers concludes that the Lower Rio Grande Flood Control Project would be overtopped along 38 miles of levees primarily upstream from Anzalduas along the Rio Grande and two miles of levee along the U.S. Interior Floodway. LiDAR elevation survey data collected by the University of Texas indicates additional areas where levee crests fail to meet their design height.
- 2006** The International Boundary and Water Commission releases the Rio Grande Flood Control System Rehabilitation Plan that identifies \$125 million in levee construction projects in the Lower Rio Grande Valley. The report uses data from LiDAR elevation surveys to designate the sections most in need of repair.
- 2009** Congress appropriates \$224 million to repair levees in the Lower Rio Grande Flood Control Project and build additional flood control infrastructure.
- 2010** Floodwaters from the dissipation of Hurricane Alex cause the Rio Grande discharge to rise to 102,000 cfs at Rio Grande City. Floodwater is diverted into the Interior Floodway system for the first time since Hurricane Gilbert.

Summary

The large-scale flood control system in the Lower Rio Grande Valley has developed in three phases: **1)** The 1932-51 design and construction of the original Lower Rio Grande Flood Control Project believed to be capable of containing a flood of 187,000 cfs measured at Rio Grande City. This system failed catastrophically in the aftermath of Hurricane Beulah in 1967. **2)** The

redesign and construction of new flood control infrastructure beginning in 1970 to accommodate a flood of 250,000 cfs. The new system diverted floodwater to the Interior Floodway in 1988 following Hurricane Gilbert, when river discharge at Rio Grande City reached approximately one-fifth of the new design criteria. **3)** The identification of design flaws and physical limitations of the modern flood control system using hydraulic modeling techniques beginning in 1992 and aerial LiDAR elevation surveys in 2004. Further modeling has identified the levee sections most in need of rehabilitation.

During the development of the flood control system, metropolitan populations in the Lower Rio Grande Valley have increased by factors of 6-10 (1930 population: Brownsville 22,021; McAllen 9,074; 2000 population: Brownsville 139,722; McAllen 106,414). The flood control system originally protecting farmland now must protect large suburban populations.